



Citizen Summary

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

ArcelorMittal Indiana Harbor Long Carbon 2011 Draft Wastewater Permit NPDES Permit IN0063355 August 2011

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1) **Introduction**

Under the federal Clean Water Act, facilities that treat and discharge treated wastewater into a water of the United States (stream, lake, or wetland) must obtain and comply with a National Pollutant Discharge Elimination System (NPDES) permit. The IDEM Office of Water Quality (OWQ) administers the federal NPDES permitting program under a memorandum of understanding with the United States Environmental Protection Agency (U.S. EPA).

NPDES permits are effective for a specific time frame, up to five years. IDEM must reissue NPDES permits at least every five years. Permittees must apply for a renewal before their

permit's expiration date. The permit renewal process allows IDEM to update permit conditions to account for facility operations and environmental regulations that may have changed over the term of the permit. IDEM is proposing to issue the NPDES permit for ArcelorMittal Indiana Harbor Long Carbon (IN0063355) for a five year period.

An individual permit is a permit specifically tailored to an individual facility. Individual NPDES permit documents include the Draft Permit and a Fact Sheet that contain extensive technical details and regulatory information about the permitted facility and the NPDES permit conditions.

IDEM is providing this additional Citizen Summary to explain the purpose of a NPDES permit and permitting terminology; summarize the steps in the NPDES permitting process and how the public can participate in the review process; and summarize the conditions being proposed for the ArcelorMittal Indiana Harbor Long Carbon NPDES permit.

2) The purpose of an NPDES permit

The purpose of an NPDES permit is to control water pollution. NPDES permits contain limits for the amount of pollutants a facility can discharge in wastewater. NPDES permits also contain the facility's requirements for monitoring pollutants in its discharge and for submitting monitoring reports to IDEM's Office of Water Quality (OWQ).

3) Permitting terminology

Clean Water Act (CWA) Section 301(g) – Section 301(g) of the Clean Water Act and state rules found in the Indiana Administrative Code at 327 IAC 5-3-4(b)(2) allow for a variance from the applicable Best Available Treatment (BAT) requirements through the development of proposed modified effluent limitations (PMELs) for the non-conventional pollutants of ammonia, chlorine, color, iron, and total phenols (4AAP) provided that the following conditions are met:

- (1) The PMELs will meet the categorical BPT effluent limitations (Technology Based Effluent Limits (TBELs)) or applicable Water Quality-Based Effluent Limitations (WQBELs), whichever are more stringent;
- (2) The PMELs will not result in any additional requirements on other point or nonpoint sources;
- (3) The PMELs will not interfere with the attainment or maintenance of water quality which will protect public water supplies, aquatic life and recreational activities; and,
- (4) The PMELs will not result in the discharge of pollutants in quantities which may reasonably be anticipated to pose an unacceptable risk to human health or the environment because of bioaccumulation, persistency in the environment, acute toxicity, chronic toxicity (including carcinogenicity, mutagenicity or teratogenicity) or synergistic propensities.

Clean Water Act (CWA) Section 316(a) - Under Section 316(a) of the CWA, thermal effluent, such as cooling water, is considered a pollutant, and facilities wishing to discharge thermal effluent into a water source must apply for a NPDES permit. Section 316(a) allows a thermal discharger to obtain a thermal effluent variance by demonstrating that less stringent thermal effluent limitations would still protect aquatic life.

Clean Water Act (CWA) Section 316(b) - Under Section 316(b) of the CWA, cooling water intake structure (CWIS) shall be established so that the location, design, construction, and capacity of the CWIS reflect the best technology available to minimize adverse environmental impact.

Cooling water (40 CFR part 125.93) - Cooling water means water used for contact or non-contact cooling. This includes water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content. The intended use of the cooling water is to absorb waste heat rejected from the process or processes used, or from auxiliary operations on the facility's premises. Cooling water that is used in a manufacturing process either before or after it is used for cooling is considered process water for the purposes of calculating the percentage of a facility's intake flow that is used for cooling purposes in §125.91(a)(4).

Daily maximum - the maximum allowable daily discharge for any calendar day.

Draft permit - a document prepared prior to the public comment period by the commissioner indicating the commissioner's tentative decision to: (1) issue or deny; (2) modify; (3) revoke and reissue; (4) terminate; or (5) reissue a permit.

Effluent - a wastewater discharge from a point source to the waters of the state.

Effluent limitation - any restriction established by the IDEM commissioner on quantities, discharge rates, and concentrations of pollutants that are discharged, or will be discharged, from point sources into waters of the state.

Effluent limitations guideline - a regulation adopted by the administrator of the U.S. EPA, under Section 304(b) of the CWA, for use in establishing effluent limitations for specific point sources within a particular industrial class or category.

Monthly average - the total mass or flow-weighted concentration of all daily discharges during a calendar month on which daily discharges are sampled or measured, divided by the number of daily discharges sampled and/or measured during such calendar month. The monthly average discharge limitation is the highest allowable average monthly discharge for any calendar month.

National Pollutant Discharge Elimination System or NPDES - the national program for: (1) issuing; (2) modifying; (3) revoking and reissuing; (4) terminating; (5) denying; (6) monitoring; and (7) enforcing permits for the discharge of pollutants from point sources and imposing and enforcing pretreatment requirements by the U.S. EPA or an authorized state under Sections 307, 318, 402, and 405 of the Clean Water Act.

Outfall - the point of discharge from a point source.

Permit - any written authorization, license, or equivalent document issued to regulate the discharge of pollutants, the construction of water pollution treatment or control facilities, or land application of sludge or waste products.

Point source - any discernible, confined, and discrete conveyance, including, but not limited to, any of the following from which pollutants are or may be discharged: (1) Pipe. (2) Ditch. (3) Channel. (4) Tunnel. (5) Conduit. (6) Well. (7) Discrete fissure. (8) Container. (9) Rolling stock. (10) Concentrated animal feeding operation. (11) Landfill leachate collection system. (12) Vessel. (13) Other floating craft.

Process wastewater - any water that, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Sanitary wastewater - (commonly called sewage) the liquid and water-carried waste from residences, commercial buildings, industrial plants, institutions and other places of human occupancy that is transported by sewers and is primarily composed of human and household waste.

Wastewater - liquid or water-carried wastes from industrial, municipal, agricultural, or other sources.

4) **Steps in the process for the issuance of the ArcelorMittal Indiana Harbor Long Carbon NPDES permit**

Drafting the NPDES Permit and Fact Sheet:

IDEM uses a great deal of information and data in the development of the permit documents, which include the Draft NPDES Permit and a Fact Sheet. IDEM permit writers review information in the NPDES permit application submitted by the facility, the conditions contained in the currently applicable permit document, the facility's compliance history, the effluent quality and characteristics, the receiving water's characteristics, and the applicable state and federal laws, regulations, rules and guidelines.

On December 3, 2008, the Indiana Department of Environmental Management received a request from ArcelorMittal Steel USA Inc. to remove Outfalls 001, 020, 021, and 022 from the ArcelorMittal Indiana Harbor East NPDES permit (IN0000094) and issue a new permit for these discharges as ArcelorMittal Indiana Harbor Long Carbon (IN0063355). Therefore, this is a new permit for existing discharges.

IDEM reviewed the NPDES permit application, the existing permit conditions (under IN0000094), the compliance history (under IN0000094), the effluent quality and characteristics, the receiving waters characteristics, and the applicable state and federal laws, regulations, rules, and guidelines in the development of the draft NPDES Permit and Fact Sheet. The draft NPDES Permit and Fact Sheet for ArcelorMittal Indiana Harbor Long Carbon (IN0063355) have been developed with the cooperation and oversight of the U.S. EPA.

Public participation:

When IDEM completes its work on the Draft NPDES Permit and Fact Sheet, time will be provided for the public to review and comment on the documents. IDEM announces the opportunity for public review and comment by placing a notice in the legal section of the local newspaper and sending letters and e-mails to people and organizations that have requested notification. At least 30 days are provided for the public to review and submit written comments on a Draft NPDES Permit. As part of the public participation process, IDEM also holds formal hearings, at which time oral comments are received.

Comments addressing the technical or legal basis of the permit conditions or additional suggestions to control water pollution are deemed most helpful. IDEM will make a final decision about permit conditions only after a thorough review of all timely submitted comments, and may make changes to the permit conditions based on issues raised during the public participation process. When the final permit documents are issued, IDEM will provide a formal response for all timely submitted comments for the public to review.

Where to review a copy of the Draft NPDES Permit and Fact Sheet:

Copies of the Draft NPDES Permit and Fact Sheet are available for public review at these locations:

On IDEM's website at www.idem.IN.gov/5338.htm#arcelor

Lake County Health Department
2293 North Main Street
Crown Point, Indiana 46307
Telephone: (219) 755-3525

Gary Public Library/Main Branch
220 West 5th Avenue
Gary, Indiana 46402

IDEM Northwest Regional Office
8380 Louisiana Street
Merrillville, IN 46410
Phone: (219) 757-0265
Toll Free: (888) 209-8892 (within Indiana)
Fax: (219) 757-0267

IDEM's Indianapolis Office
Indiana Government Center North, Room 1201
100 North Senate Avenue
Indianapolis, IN 46204

How to submit comments:

IDEM will accept written comments that are postmarked or e-mailed to the agency by September 30, 2011. *Comments should include Permit Number IN0063355.*

Mail to:

Nicole Gardner
IDEM, Office of Water Quality
MC 65-42 IGCN 1255
100 N Senate Ave
Indianapolis, IN 46204-2251

E-mail to:

ngardner@idem.IN.gov

Public hearing:

As part of the public participation process, IDEM will hold a formal Public Hearing on this Draft NPDES Permit at 6 p.m. (local time) on Thursday, September 15, 2011 at **Ivy Tech Community College-Gary Campus, in the Multipurpose Room (North Building), located at 1440 East 35th Avenue, Gary, Indiana.** The Public Hearing will provide an opportunity for interested parties and IDEM staff to discuss the NPDES permit. Citizens will also have an opportunity during the IDEM Public Hearing to submit written comments and make

formal oral statements concerning the draft permit. A court reporter will be present at the IDEM Public Hearing to assure oral statements are documented, as they will be considered part of the official record.

Final permit decision:

When IDEM's Office of Water Quality takes final action relating to the permit, it will mail a Notice of Decision to individuals who have submitted comments or requested to receive notification. Individuals who do not wish to submit comments but wish to receive notification should submit their name and address to IDEM with a request to be placed on the permit mailing list.

5) Permit Issuance Conditions

All NPDES permits contain five general sections: the Cover Page (with the name and location of the permittee, a statement authorizing the discharge, and the specific locations for which a discharge is authorized); Effluent Limits (information about how discharges of pollutants will be controlled); Monitoring and Reporting Requirements; Special Conditions (such as best management practices (BMPs), additional monitoring activities, and surveys or evaluations of the receiving waters); and Standard Conditions (pre-established conditions that apply to all NPDES permits).

Following is additional information about the draft permit documents for ArcelorMittal Indiana Harbor Long Carbon.

About the permit application:

IDEM received the permit application from ArcelorMittal Indiana Harbor Long Carbon on December 3, 2008. The processes and wastewater discharges proposed to be regulated by this NPDES Permit No. IN0063355 were previously permitted under NPDES Permit No. IN0000094, a permit also held by ArcelorMittal (Indiana Harbor East). A five year permit is proposed.

Facility description:

The ArcelorMittal Steel USA Inc. Indiana Harbor Long Carbon facility is a steel manufacturing facility. Operations at this facility consist of electric furnace steelmaking, ladle metallurgy, billet casting, hot rolling (bar mill), and ancillary operations.

ArcelorMittal Indiana Harbor Long Carbon has one point source discharge to the Indiana Harbor Ship Canal consisting of once-through non-contact cooling water, treated process water from the Electric Furnace/Billet Caster (EC/BC) and 12" Bar Mill (Internal Outfall 602), Electric Arc Furnace slag cooling water, steam condensates, ground water, and some storm water. ArcelorMittal Indiana Harbor Long Carbon has three point source discharges to the Indiana Harbor Ship Canal consisting solely of storm water. A complete listing and description of the wastewater and discharge outfall points are detailed in the Fact Sheet.

Receiving water and use classification:

The Indiana Harbor Canal is designated for full-body contact recreation and shall be capable of supporting a well-balanced, warm water aquatic community. This waterbody is identified as a Water of the State within the Great Lakes system. As such, it is subject to the water quality standards and associated implementation procedures specific to Great Lakes system dischargers as found in 327 IAC 2-1.5, 327 IAC 5-1.5, and 327 IAC 5-2.

Section 303(d) of the Clean Water Act requires states to identify waters, through their Section 305(b) water quality assessments, that do not or are not expected to meet applicable water quality standards with federal technology based standards alone. States are also required to develop a priority ranking for these waters taking into account the severity of the pollution and the designated uses of the waters. Once this listing and ranking of impaired waters is completed, the states are required to develop [Total Maximum Daily Loads \(TMDLs\)](#) for these waters in order to achieve compliance with the water quality standards. Indiana's 2010 303(d) List of Impaired Waters was developed in accordance with Indiana's Water Quality Assessment and 303(d) Listing Methodology for Waterbody Impairments and TMDL Development for the 2010 Cycle. As of the 2010 303(d) List of Impaired Waters, the following impairments were listed for the water to which the permittee discharges: Impaired Biotic Communities, Oil and Grease, *E. coli*, and PCBs in Fish Tissue.

Wastewater sources and treatment by outfall:

Outfall 001 Discharges to the Indiana Harbor Canal

The discharge from Outfall 001 consists of once-through non-contact cooling water, treated process water from the Electric Furnace/Billet Caster (EC/BC) and 12" Bar Mill (Internal Outfall 602), Electric Arc Furnace slag cooling water, steam condensates, ground water, and some storm water. Non-contact cooling water is chlorinated and de-chlorinated prior to discharge whenever intake water temperature is above 55°F.

The wastewater treatment system has an average discharge of approximately 3.65 million gallons per day (MGD) and has been given a Class D industrial wastewater treatment plant classification in accordance with 327 IAC 5-22.

Internal Outfall 602 Discharges to the Indiana Harbor Canal via Outfall 001

Outfall 602 is the internal process wastewater outfall for the EF/BC and 12" Bar Mill process wastewater treatment systems. The treated wastewaters are limited and monitored prior to mixing with non-contact cooling water and discharges to the Indiana Harbor Ship Canal via Outfall 001.

Outfalls 020, 021, and 022 Discharge to the Indiana Harbor Canal

The discharge from Outfalls 020, 021, and 022 consists of stormwater only. No treatment of storm water takes place.

Effluent limitations rationale – general:

Federal Effluent Guidelines in 40 CFR 420, Iron and Steel Manufacturing Point Source Category, and the Indiana Water Quality Based Effluent Limitations are applicable because the facility is defined as a fully integrated steel mill. According to 40 CFR 122.44 and 327 IAC 5, NPDES permit limits are based on technology-based limitations, where applicable, best professional judgment (BPJ), and Indiana Water Quality-Based Effluent Limitations (WQBELs).

U.S. EPA Effluent Guidelines -- Existing Source Standards

The U.S. EPA has established technology-based effluent guidelines for the Iron and Steel Manufacturing Point Source Category (40 CFR Part 420). Since this is an existing facility, all process wastewater discharges are subject to effluent guidelines identified in 40 CFR 420.

Indiana Water Quality Based Effluent Limits (WQBELs)

The water quality-based effluent limitations for this facility are based on water quality criteria in 327 IAC 2-1.5 and implementation procedures in 327 IAC 5-2. Limitations and/or monitoring are required for parameters identified by applications of the reasonable potential to exceed WQBEL under 327 IAC 5-2-11.5.

Narrative Water Quality Based Limits

The narrative water quality contained under 327 IAC 2-1.5-8(a) have been included in this permit to ensure that the narrative water quality criteria are met.

Numeric Water Quality Based Limits

The numeric water quality criteria and values contained in this permit have been calculated using the tables of water quality criteria 327 IAC 2-1.5-8.

Effluent limitations by outfall:

Outfall 001

**Table 1 Final Limits Outfall 001
Proposed Effluent Limitations and Monitoring Requirements for Outfall 001**

Parameter	Sample Frequency	Sample Type	Concentration mg/l		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	Daily	24 Hr. Total	----	----	Report	Report
Total Suspended Solids	2 X Week	24 Hr. Composite	Report	Report	Report	Report
Oil and Grease	2 X Week	Grab	Report	Report	Report	Report
Total Lead	2 X Week	24 Hr. Composite	Report	Report	Report	Report
Total Zinc	2 X Week	24 Hr. Composite	Report	Report	Report	Report
Mercury [1]	6 X Year	Grab	1.3×10^6	3.2×10^6	0.000039	0.000096
Total Res. Chlorine	5 X Week	Grab	0.016	0.037	0.48	1.1 [5]
Temperature [2]	2 X Week	Grab	Report	Report	---	---
Thermal Discharge	2 X Week	Report	----	----	Report	Report
Biomonitoring	[3]					
pH [4]	2 X Week	Grab	---	---	---	---

[1] Schedule of Compliance (54 Month)

[2] Effluent and Intake

[3] Monthly for three consecutive months, if no toxicity demonstrated, frequency can be reduced to 1 X Quarter for the duration of the permit.

[4] pH shall range from 6.0 s.u. (Daily Minimum) to 9.0 s.u. (Daily Maximum)

[5] Compliance with the daily maximum mass value will be demonstrated if the calculated mass value is less than 1.8 lbs/day.

Outfall 602

Table 2 Final Limits Outfall 613
Proposed Effluent Limitations and Monitoring Requirements for Outfall 002

Parameter	Sample Frequency	Sample Type	Concentration mg/l		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	2 X Week	24 Hr Total	----	----	Report	Report
Total Suspended Solids	2 X Week	24 Hr. Composite	----	----	404	1095
Oil & Grease	2 X Week	Grab	----	----	94.0 [1]	282 [1]
Total Lead	2 X Week	24 Hr. Composite	----	----	0.26 [2]	0.60 [2]
Total Zinc	2 X Week	24 Hr. Composite	----	----	0.74	2.23

- [1] The mass based daily maximum limits have been retained from the previously applicable permit. The limits are based on the federal effluent limitation guidelines 420.72/77(b)(1) and 420.62/63 and are applied at internal outfall 602. Through application of BPJ, IDEM has developed mass based monthly average limits. This was necessary as one of two processes contributing to Outfall 602 has both daily maximum and monthly average mass based limits for Oil & Grease. Therefore, the both daily maximum and monthly average limits must be applied at the outfall. For EAF Billet Caster discharge, the monthly average limitation is 1/3 of the daily maximum. Therefore, the monthly average limit for the 12" Bar Mill was calculated to be 1/3 of the daily maximum as well.
- [2] The mass based daily maximum limits have been retained from the previously applicable permit.

Outfalls 020, 021, and 022

Table 3 Final Limits Outfalls 020, 021, and 022
Proposed Effluent Limitations and Monitoring Requirements for Stormwater Outfalls 020, 021, and 022

Parameter	Sample Frequency	Sample Type	Concentration mg/l
			Daily Maximum
Flow	2 X Year	Estimate	Report
Oil & Grease	2 X Year	Grab	Report
CBOD5	2 X Year	Grab	Report
COD	2 X Year	Grab	Report
Total Suspended Solids	2 X Year	Grab	Report
Total Kjeldahl Nitrogen	2 X Year	Grab	Report
Nitrate + Nitrite Nitrogen	2 X Year	Grab	Report
Total Phosphorus	2 X Year	Grab	Report
pH	2 X Year	Grab	Report
Ammonia (as N)	2 X Year	Grab	Report
Total Chromium	2 X Year	Grab	Report
Free Cyanide	2 X Year	Grab	Report
Copper [1]	2 X Year	Grab	Report
Iron [1]	2 X Year	Grab	Report
Lead [1]	2 X Year	Grab	Report
Zinc [1]	2 X Year	Grab	Report

[1] The permittee shall measure and report the identified metals as total recoverable metals.

Schedule of compliance for the new effluent limitations for mercury:

The Reasonable Potential to exceed water quality based effluent limits analysis identified Mercury in the effluent from Outfall 001 to have the potential to exceed the final effluent limitations in the permit. Based on the limited nature of the available data, the Indiana Harbor Long Carbon facility may not be able to assure 100% compliance with the new WQBEL effluent limits for these metals at the time the renewal NPDES permit is issued. Therefore, the proposed permit is eligible to contain a schedule of compliance for the new water quality-based effluent limitations for Mercury at Outfall 001. The schedule of compliance requires ArcelorMittal to develop a plan to identify the source(s) of mercury in the wastewater and develop a plan to achieve compliance with the final effluent limits and implement the plan within 24 months after the plan to collect data and information regarding pollution prevention and treatment has been approved.

ArcelorMittal does not intentionally introduce Mercury at the Indiana Harbor Long Carbon facility as raw materials, process additives, alloying elements, or in any significant manner in the basic steel making or steel finishing processes. The exact source(s) are currently unknown. Given these circumstances, a compliance schedule regarding the final effluent limits for Mercury requires the permittee to achieve compliance with the effluent limitations specified for Mercury at Outfall 001 as soon as possible but no later than fifty-four (54) months from the effective date of this permit. See the Fact Sheet or Permit for more details about the Schedule of Compliance for this pollutant.

Thermal requirements:

The Indiana Harbor Canal and Indiana Harbor shall be capable of supporting a well-balanced, warm water aquatic community. The water quality criteria for temperature applicable to these waterbodies are included in 327 IAC 2-1.5-8(c). Temperature was not a pollutant of initial focus in the Water Quality Guidance for the Great Lakes system under 40 CFR Part 132. Therefore, Indiana was allowed to apply its own temperature criteria to waters within the Great Lakes system when the rules were last revised in 1997 as part of the Great Lakes rulemaking. During this rulemaking, the monthly maximum temperature criteria that were updated in 1990 were retained. Indiana regulations state that the temperature criteria apply outside a mixing zone, but the allowable mixing zone is not established in the rules. IDEM current practice is to allow fifty percent (50%) of the stream flow for mixing to meet temperature criteria.

The implementation procedures under 327 IAC 5-2-11.4 for developing wasteload allocations for point source discharges address temperature under 5-2-11.4(d)(3). This provision states that temperature shall be addressed using a model, approved by the commissioner, that ensures compliance with the water quality criteria for temperature. There is also no specific procedure in the rules for determining whether a discharger is required to have water quality-based effluent limits (WQBELs) for temperature. Therefore, the general provision for making reasonable potential determinations in 5-2-11.5(a) is applicable. This provision establishes that if the commissioner determines that a pollutant or pollutant parameter is or may be discharged into the Great Lakes system at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable narrative or numeric water quality criterion under 2-1.5, the commissioner shall incorporate WQBELs in an NPDES permit that will ensure compliance with the criterion. In making this determination, the commissioner shall exercise best professional judgment, taking into account the source and nature of the discharge, existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, and, where appropriate, the dilution of the effluent in the receiving water. The commissioner shall use any valid, relevant, representative information pertaining to the discharge of the pollutant.

The multi-discharger model for the Indiana Harbor Canal/Lake George Canal/Indiana Harbor sub-watershed discussed above included five active outfalls discharging to the Indiana Harbor Canal and four active outfalls discharging to the Indiana Harbor that contain a thermal component such as non-contact cooling water or boiler blowdown as a source of wastewater. ArcelorMittal Indiana Harbor Long Carbon Outfall 001 has a flow of 3.6 MGD with Internal Outfall 602 contributing 0.16 mgd and the remaining flow consisting mostly of non-contact cooling water. The 1996 permit (IN0000094) includes temperature monitoring and the reporting of thermal discharge based on the intake and outfall temperatures. The source of cooling water for ArcelorMittal Indiana Harbor Long Carbon is the Main Intake of the ArcelorMittal Indiana Harbor East (IN0000094) facility on Lake Michigan. Effluent temperature data reported for the period January 1998 through December 2010 were reviewed. The data follow a seasonal pattern with a maximum recorded temperature of 87.4 °F in August 2003.

The multi-discharger model accounted for the intrusion of lake water into the Indiana Harbor and Indiana Harbor Canal. The intrusion of lake water produces thermal stratification that ends at the railroad bridge about 0.7 miles upstream of the mouth of the Indiana Harbor Canal. The ArcelorMittal Indiana Harbor Long Carbon outfall on the east side of the canal and two ArcelorMittal outfalls on the west side of the canal are upstream of the railroad bridge. ArcelorMittal West (IN0000205) Outfalls 009 and 010, which are two large sources of non-contact cooling water, are the first two discharges downstream of the railroad bridge. As part of a special condition in the 1996 permit (IN0000094), the facility was required to conduct sampling in the Indiana Harbor Canal downstream of Outfall 001 and between Outfalls 008 and 011 and in the Indiana Harbor at a point equal distant from Outfalls 011, 014 and 018. Sampling was to be conducted from April through November for two years and at three river depths (one foot below the surface, mid-depth and one foot above the bottom). The facility conducted the sampling in 1997 and 1998 and submitted a summary of the results of this sampling along with an analysis of the thermal impact of the ArcelorMittal discharges to the Indiana Harbor Canal and Indiana Harbor based on the sampling results in a November 19, 2010 report. The report concluded the following: ArcelorMittal East (IN0000094) and ArcelorMittal West (IN0000205) were both operating at reasonably high production rates in 1997 and 1998 as measured by raw steel production; ambient air temperatures were within normal ranges; there have been no significant changes in the flow regimes in the Indiana Harbor Canal since the study was done; and, the study results demonstrate compliance with applicable temperature criteria.

Additional temperature monitoring at multiple depths was conducted in the Indiana Harbor Canal and Indiana Harbor as part of the July 1999 and April 2000 sampling conducted for the Grand Calumet River TMDL study. The sampling included two locations in the Indiana Harbor (just beyond the lighthouse at the outer edge of the Indiana Harbor and in the middle of the Indiana Harbor, just downstream of ArcelorMittal West (IN0000205) Outfall 011, the last outfall on the Indiana Harbor), two locations in the Indiana Harbor Canal downstream of the railroad bridge (about 0.6 miles downstream of ArcelorMittal West Outfalls 009 and 010 at the mouth of the Indiana Harbor Canal and about 0.3 miles downstream of ArcelorMittal West Outfalls 009 and 010), one location just downstream from Dickey Road and downstream of the three thermal discharges upstream of the railroad bridge and one location just upstream of ArcelorMittal Central WWTP (IN0063711) Outfall 001 which is the ArcelorMittal thermal discharge that is furthest upstream of the railroad bridge. The data showed temperature stratification downstream of the railroad bridge and a decreasing trend in temperature from upstream to downstream. The Indiana Harbor Canal and Indiana Harbor were in compliance with the water quality criteria for temperature. Effluent temperature and flow data were collected during the July 1999 sampling and effluent temperature data were collected during the April 2000 sampling. The TMDL studies were done after the shutdown of the No. 4 AC power station that discharged through ArcelorMittal East Outfall 018 until about May 1999. A review of historical instream temperature data at IDEM fixed stations on the Indiana Harbor Canal and Indiana Harbor from January 1990 through December 2010 and the fixed station on Lake Michigan from January 1997 through December 2010 shows that the maximum temperature values were recorded in July 1999. The average stream flow during the July 1999 temperature monitoring as recorded at USGS gaging station 04092750 in the Indiana Harbor Canal at Canal Street was 485 cfs which is close to the Q7,10 of 352 cfs. Therefore, the July 1999 temperature monitoring was done during a period that is very close to critical stream conditions.

In addition to the instream sampling, a multi-discharger model was used to assist in the reasonable potential analysis. The multi-discharger model for toxics discussed above was modified to account for temperature. The mixing zone was set at fifty percent (50%) of the stream flow to be consistent with current IDEM practice for mixing zones for temperature. The model does not account for heat dissipation so it represents a conservative, dilution only analysis. The effluent and instream data collected in July 1999 and April 2000 as part of the Grand Calumet River TMDL study were used as inputs to the model to determine if the model

could predict the measured instream temperatures. The model predicts an increase in temperature downstream of the railroad bridge beginning with ArcelorMittal West Outfalls 009 and 010 and no exceedance at the edge of any mixing zones for both July 1999 and April 2000. The July 1999 TMDL data show a large decrease in temperature (about 7 °F) from Dickey Road to downstream of ArcelorMittal West Outfalls 009 and 010 in the upper one-half depth of the temperature stratified river with an even larger decrease in the lower one-half depth. There was essentially no further decrease in temperature in the Indiana Harbor during the sampling. The April 2000 TMDL data show a small decrease (about 0.5 °F) from Dickey Road to downstream of Outfalls 009 and 010. However, the temperature did decrease to a larger extent in the Indiana Harbor (about 4 °F). The multi-discharger model is therefore a conservative means of determining the impact of the thermal discharges.

A Q7,10 flow of 352 cfs, long-term average effluent flows, except as noted below, and background temperatures from fixed station IHC-3S were used in the multi-discharger thermal model as were used in the multi-discharger toxics model. The effluent temperature input to the model was set equal to the maximum temperature reported for the month during the period January 1998 through December 2010 if it was considered representative data. The maximum temperature for November for ArcelorMittal Indiana Harbor Long Carbon was reported in 2009, but it was not considered representative due to low discharge flows from the idling of the plant. The critical peak temperature months of June through September were included as one period since the same maximum criterion of 90 °F applies each month. The effluent flow for ArcelorMittal West Outfall 009 for the June through September period was set equal to the daily maximum flow due to this outfall having the highest effluent temperature and a significant increase in discharge flow during this period. The results of the conservative, dilution only modeling show that the discharge from ArcelorMittal Indiana Harbor Long Carbon Outfall 001 does not have a reasonable potential to cause or contribute to an excursion of the water quality criterion for temperature in the Indiana Harbor Canal or Indiana Harbor from January through December. Based on the results of the instream sampling and multi-discharger thermal model, the discharge from ArcelorMittal Indiana Harbor Long Carbon Outfall 001 does not have a reasonable potential to exceed a water quality criterion for temperature. Under 5-2-11.5(e), the commissioner may require monitoring for a pollutant of concern even if it is determined that a WQBEL is not required based on a reasonable potential determination. Monitoring for temperature and thermal discharge was continued in the renewal permit. Monitoring for temperature and thermal discharge was continued in the renewal permit as presented below:

Thermal Effluent Requirements

The thermal discharge shall be calculated for Outfall 001. Such discharge shall be limited and monitored by the permittee as specified below.

- a. Flow and temperature values used in thermal discharge calculations shall be taken from the same day of monitoring.
- b. The thermal discharge shall be computed as follows:

$$\text{Thermal Discharge (MBtu/Hr.)} = Q \times (T_o - T_i) \times 0.3477$$

where,

MBtu/hr = Million Btu/Hr.
Q = 24 hour discharge flow, MGD
T_o = effluent temperature, °F
T_i = influent temperature, °F
0.3477 = conversion factor

c. Temperature shall be monitored as follows at Outfall 001:

DISCHARGE LIMITATIONS
(Outfall 001)

<u>Parameter</u>	<u>Quantity or Loading</u>		<u>Units</u>	<u>Quality or Concentration</u>		<u>Units</u>	<u>Monitoring Measurement Frequency</u>	<u>Requirements Sample Type</u>
	<u>Monthly Average</u>	<u>Daily Maximum</u>		<u>Monthly Average</u>	<u>Daily Maximum</u>			
Temperature								
Effluent [1]	----	----	----	Report	Report	°F	2 X Week	Grab
Intake [2]	----	----	----	Report	Report	°F	2 X Week	Grab

[1] Temperature at Outfall 001 shall be sampled between the hours of 12 pm and 4 pm.

[2] On days when temperature is sampled at the outfall, temperature shall also be sampled at the corresponding intake.

Cooling Water Intake Structure (CWIS):

Section 316(b) of the federal Clean Water Act requires that facilities minimize adverse environmental impact resulting from the operation of cooling water intake structures (CWIS) by using the best technology available (BTA). U.S. EPA has promulgated rules to implement these requirements for new facilities (Phase I rules), large, existing power plants (Phase II rules) which are currently remanded, and offshore oil and gas extraction facilities (Phase III rules), and that implementation must take place through the issuance of NPDES permits. However, there is a large universe of facilities which are not specifically addressed by the rules, including:

- New facilities with a CWIS design flow less than 2 MGD;
- Existing power plants with a CWIS design flow less than 50 MGD;
- Manufacturing facilities such as existing steel mills, paper mills, etc. with a surface water intake that use at least a portion of their intake flow for cooling purposes.

U.S. EPA has recently emphasized that all of these facilities, including those not specifically addressed by rules must be evaluated for 316(b) compliance. 40 C.F.R. §125.90(b) directs permitting authorities to establish 316(b) requirements on a best professional judgment (BPJ) basis for existing facilities not subject to categorical section 316(b) regulations (Phase I, II (currently remanded) or III rules. IDEM is required to make a BTA determination using BPJ so the permit will comply with the federal regulation. The ArcelorMittal Indiana Harbor Long Carbon facility service water is provided from the ArcelorMittal Indiana Harbor East Main Intake (No. 2 Pump House). This CWIS is under the control of ArcelorMittal Indiana Harbor East and will continue to be regulated under IN0000094. NPDES Permit IN0000094 will contain IDEM's BTA determination.

Storm Water:

U.S. EPA has determined that non-numeric Technology-Based Effluent Limits have been determined to be equal to Best Practicable Control Technology Currently Available (BPT)/Best Available Technology Economically Achievable (BAT)/Best Conventional Pollutant Control Technology (BCT) for storm water associated with industrial activity. The Non-Numeric Stormwater Conditions and Effluent Limits contain the technology-based effluent limitations. Effective implementation of these requirements should meet the applicable water quality based effluent limitations. The non-numeric requirements of the permit contain effluent limitations,

defined in the CWA as restrictions on quantities, rates, and concentrations of constituents which are discharged. Violation of any of these effluent limitations constitutes a violation of the permit.

The technology-based effluent limitations require the permittee to minimize exposure of raw, final, or waste materials to rain, snow, snowmelt, and run-off. In doing so, the permittee is required, to the extent technologically available and economically practicable and achievable, to either locate industrial materials and activities inside or to protect them with storm resistant coverings. In addition, the permittee is required to: (1) use good housekeeping practices to keep exposed areas clean, (2) regularly inspect, test, maintain and repair all industrial equipment and systems to avoid situations that may result in leaks, spills, and other releases of pollutants in stormwater discharges, (3) minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans for effective response to such spills if or when they occur, (4) stabilize exposed area and contain run-off using structural and/or non-structural control measures to minimize onsite erosion and sedimentation, and the resulting discharge of pollutants, (5) divert, infiltrate, reuse, contain, or otherwise reduce storm water run-off, to minimize pollutants in your discharges, (6) enclose or cover storage piles of salt or piles containing salt used for deicing or other commercial or industrial purposes, including maintenance of paved surfaces, (7) train all employees who work in areas where industrial materials or activities are exposed to stormwater, or who are responsible for implementing activities necessary to meet the conditions of this permit (e.g., inspectors, maintenance personnel), including all members of your Pollution Prevention Team, (8) ensure that waste, garbage, and floatable debris are not discharged to receiving waters by keeping exposed areas free of such materials or by intercepting them before they are discharged, and (9) minimize generation of dust and off-site tracking of raw, final, or waste materials.

To meet the non-numeric effluent limitations in Part I.E.5, the permit requires the permittee to select control measures (including best management practices) to address the selection and design considerations in Part I.E.4. The permittee must control its discharge as necessary to meet applicable water quality standards. It is expected that compliance with the technology-based effluent limitations and other terms and conditions in this permit will meet this effluent limitation. However, if at any time the permittee, or IDEM, determines that the discharge causes or contributes to an exceedance of applicable water quality standards, the permittee must take corrective actions, and conduct follow-up monitoring.

In addition to the non-numeric effluent limitations, IDEM has implemented a baseline monitoring requirement for specific parameters to demonstrate progress of control measures at the facility. Historic data (collected for storm water outfalls under IN0000094) will be used to determine the baseline concentration for the parameters and subsequent measurements will demonstrate the overall effectiveness of the control measures implemented at the site and will assist the permittee in knowing when additional corrective action(s) may be necessary to comply with the provisions in Part I.E.5 of the permit.

Storm water monitoring data collected during the permit term shall be compared to the baseline concentrations annually to determine if the control measures being implemented at the site result in an improvement from the baseline established by the permittee. If the sample results exceed the baseline concentration, the permittee must take corrective actions in Part I.E.7 of the permit. Follow-up sampling should occur as soon as possible after implementation of corrective actions.

An exceedance of a baseline concentration is not a permit violation. However, failing to take the corrective actions in Part I.E.7 as a result of a baseline concentration exceedance is a violation of the permit. The permittee shall strive for continuous improvement from the baseline until it has been demonstrated that the permittee has implemented the best management practice to meet the provisions in Part I.E.5. of this permit.

Part I.E.6 of the permit was added to require an annual review of the selection, design, installation, and implementation of the control measures to determine if modifications are necessary to meet the effluent limitations in the permit. This annual review will reinforce the continuous improvement of storm water discharges. While this approach is different than EPA's benchmarking process where a monitoring result exceeding a benchmark triggers the review of the selection, design, installation, and implementation of the control measures, the permittee is required to review the selection, design, installation, and implementation of the control measures annually whether or not the monitoring results exceed a baseline concentration. Failing to conduct the annual review of the selection, design, installation, and implementation of the control measures and reporting the results to Industrial Permit Section is a violation of the permit. The permittee shall retain any and all records related to this documentation within the Storm Water Pollution Prevention Plan (SWP3). In addition, this same information must also be submitted to the Industrial NPDES Permit Section on an annual basis.

“Terms and Conditions” to provide information in a SWP3

Distinct from the effluent limitation provisions in the permit, the permit requires the discharger to prepare a Stormwater Pollution Prevention Plan (SWP3) for its facility. The SWP3 is intended to document the selection, design, installation, and implementation (including inspection, maintenance, monitoring, and corrective action) of control measures being used to comply with the effluent limits set forth in Part I.E. of the permit. In general, the SWP3 must be kept up-to-date, and modified whenever necessary to reflect any changes in control measures that were found to be necessary to meet the effluent limitations in this permit.

The requirement to prepare a SWP3 is not an effluent limitation, rather it documents what practices the discharger is implementing to meet the effluent limitations in Part I.E. of the permit. The SWP3 is not an effluent limitation because it does not restrict quantities, rates, and concentrations of constituents which are discharged. Instead, the requirement to develop a SWP3 is a permit “term or condition” authorized under sections 402(a)(2) and 308 of the Act. Section 402(a)(2) states, “[t]he Administrator shall prescribe conditions for [NPDES] permits to assure compliance with the requirements of paragraph (1) of this subsection, including conditions on data and information collection, reporting, and such other requirements as he deems appropriate.” The SWP3 requirements set forth in this permit are terms or conditions under the Clean Water Act because the discharger is documenting information on how it intends to comply with the effluent limitations (and inspection and evaluation requirements) contained elsewhere in the permit. Thus, the requirement to develop a SWP3 and keep it updated is no different than other information collection conditions, as authorized by section 402(a)(2), in other permits.

The following pollutant parameters will be monitored in the effluent from Outfalls 020, 021, and 022 as indicators of the performance of the control measures: Flow, Oil & Grease, CBOD₅, COD, Total Suspended Solids (TSS), Total Kjeldahl Nitrogen, Nitrate + Nitrite Nitrogen, Total Phosphorus, pH, Ammonia (as N), Total Chromium, Free Cyanide, Copper, Iron, Lead, and Zinc.

6) For more information

The public should direct questions to Nicole Gardner, IDEM contact person with IDEM's Office of Water Quality, at (800) 451-6027 ext. 2-8707, (317) 232-8707, or via e-mail at ngardner@idem.IN.gov.

The media should direct inquiries to Amber Finkelstein, IDEM public information officer, at (800) 451-6027, ext. 2-8512, (317) 232-8512, or via e-mail to afinkels@idem.IN.gov.

Please visit the IDEM website at www.idem.IN.gov/5338.htm#arcelor.